Instructions to RFC Authors

Status of this RFC

This RFC provides information to the NASA Earth Science community. This RFC does not specify an Earth Science Data Systems (ESDS) standard. Distribution of this memo is unlimited.

Change Explanation

Updated to reflect the process described in Process for Earth Science Data Systems Standards and References (ESDS-RFC-024) which obsoletes The ESDS Standards Process (ESDS-RFC-002).

Copyright Notice

Abstract

This document provides information about the preparation of Requests for Comment (RFCs), documents submitted to the NASA ESDIS Standards Office (ESO) describing proposed standards, guidelines and other reference documents. These instructions detail certain policies pertaining to the publication of RFCs, acceptable document style, required and optional content, and the packaging and file format requirements for all ESDS RFC submissions, from their initial submission until their final release as either an ESDS standard or a technical note.

RFCs may cover a broad range of topics related to Earth Science Data Systems standards and practices. RFCs may be submitted by anyone. All RFCs are available online and publicly accessible by the public.

Table of Contents

1 Introduction

One role of the ESO is to assist the ESDIS Project in formulating standards policy for NASA Earth Science Data Systems (ESDS), coordinate standards activities within ESDIS, and provide technical expertise and assistance to standards related tasks within the NASA Earth Science Data System Working Groups (ESDSWG).

This includes maintaining an archive of all materials associated with ESDS standards, guidelines and other reference documents. The guidelines in this document were developed in order to make this task as simple as possible for both the submitters and the ESO. This document has been adapted from the IETF “Instructions to the RFC Authors” document [1].

ESDS RFC submissions shall be submitted to the ESO as described in ESDS-RFC-24 “Process for Earth Science Data Systems Standards” [2]. RFC authors and the ESO will work together to collect all the materials needed to submit an RFC, to track its progress through the ESDS standards process, and to maintain the eventual ESDS standard, guideline or other reference document that results when a submission successfully negotiates the process.

This document provides information about the preparation of the RFC: acceptable document style, the required and optional content of the RFC, the acceptable packaging and document formats, and the policies for the publication of the RFCs. RFCs may cover a broad range of topics related to Earth Science data systems standards and practices. RFCs will be publicly accessible online.

Information about the ESDS Standards, and the ESDS Standards Process itself, including this document, can be found at the ESO website: https://earthdata.nasa.gov/esdis/esdis-standards-office-eso and in the ESO collaboration area: https://wiki.earthdata.nasa.gov/display/ESO It is recommended that you familiarize yourself with the contents of the Process for Earth Science Data Systems Standards and References [2] before reading this document.

1.1 Version Management

An RFC cannot be substantially altered once it enters the ESDIS Standards Process. To accommodate the need for minor editorial changes, corrections or clarifications over the lifetime of an RFC, the ESO has adopted the use of an errata document and a version management system.

Each time the RFC document is modified in a minor (i.e. editorial) way, it is released with a new version number. Alternatively the ESO may choose to list the changes in an Errata file rather than release new versions of the document. The latter approach may be employed as a guard against releasing several new versions in quick succession.

Changes from the previous version must be noted in the Section labeled "Change Explanation" of the RFC.

If more substantive technical changes are required, a new RFC must be written that obsoletes the previous one. For this reason, the authors should thoroughly review the final draft of the document before final submission.

If you find what you believe to be an error in an RFC, consult the errata page, if there is one. If the bug is not listed, please send e-mail to the authors of the document, and copy the RFC Editor.

1.2 Not all RFCs are standards

RFCs can fall into several different categories covering several different topics. These are described in Section 2 of ESDS-RFC-024 [2].

1.3 Publication Language

Because the Earth Science Data Systems Working Groups are a NASA activity, sponsored by the U.S. government, English is the official publication language for ESDS RFCs. RFCs submitted for publication are required to meet a reasonable standard for clear and correct English.

1.4 References

Within an RFC, references to other documents fall into two general categories: "normative" and "informative". Normative references specify documents that must be read to understand or implement the technology in the new RFC, and whose requirements must be complied with for the technology in the new RFC to work. For example, if an ESDS proposed standard is a profile or extension of an existing standard (or if the proposal is to adopt an existing standard unchanged for ESDS purposes), then it needs to include a normative reference to the existing standard document, in whatever form it exists. If possible, the ESO will keep a copy of the referenced base standard on the ESO web site, in addition to the profile/extension RFC. The ESO will also provide a link to the current authoritative version of the base standard.

An informative reference is not normative; rather, it only provides additional information. For example, an informative reference might provide background or historical information. Material in an informative reference is not required to implement the technology in the RFC.

The distinction between normative and informative references is often important. The ESO standards process and the ESO RFC publication process must indicate whether a reference to a work in progress is normative because, in general, RFCs cannot be published for review until all of the documents that are listed as normative references have been published. In practice, this can result in the simultaneous publication of a group of inter-related RFCs.

An RFC must include separate lists of normative and informative references (see Section 2.9 below.)

1.5 URLs in RFCs

Care must be taken with the use of URLs in RFCs because many URLs are not stable references.

1.6 Relation to other RFCs

Sometimes an RFC adds information on a topic discussed in a previous RFC or completely replaces an earlier RFC. Two terms are used for these cases: Updates and Obsoletes, respectively.

1.6.1 Updates

Must specify one or more earlier document(s) whose contents are modified or updated by the new document. The new document cannot be used alone; it can only be used in conjunction with the earlier document.

1.6.2 Obsoletes

Must specifies one or more earlier document(s) that the new document replaces. The new document can be used alone as a replacement for the obsolete document. The new document may contain revised information or all of the same information plus some new information, however extensive or brief that new information may be.

1.6.3 Cross referencing

In lists of RFCs and in any document index on the ESO web site (but not on the RFCs themselves), the following are used for older documents that were referred to by Obsoletes or Updates relations in newer documents:

“Obsoleted-by” is used to specify newer document(s) that replace the older document.

“Updated-by” is used to specify newer document(s) that modify the older document.

Updated versions of a particular RFC, as indicated in the ESDS-RFC number, are assumed to obsolete any previous version. Therefore, only the latest version of an RFC will appear in any document index. Previous versions may be found in the appropriate RFC folder on the ESO web site.

1.7 Authors Listed on RFC

The primary author(s) of an RFC work closely with the ESO to ready the document for publication. While others may contribute to drafting and editing the RFC, the primary author(s) are equally responsible for the final form and content of the published RFC and must approve the final document. When there are many contributors, the best choice will be to list the person or (few) persons who acted as document editor(s) (e.g., “Tom Smith, Editor"). Contact information for the lead author(s) is provided in the Authors section.

1.8 RFC Content, Style, and Submission Format

There is a distinction between the content of an RFC, the style (i.e. visual appearance), and file format (i.e. what software applications are required/able to edit the document) in which that content is presented. Section 2 presents the content requirements. Section 3 presents the style and format instructions.

All abbreviations that are used in the body must be expanded the first time they occur. A few exceptions will be made for abbreviations that are so well known that expansion is unnecessary, e.g., TCP, FTP, NASA, etc.

2 RFC Required and Optional Sections

An RFC may contain the following sections. Some of these are optional, as noted. When they are present, the generally recommended order is shown in the following list.

1. Running Page Headers
2. Title
3. Status of this Memo
4. Change Explanation
5. Copyright Notice
6. Abstract
7. Table of Contents [optional for documents less than 5 pages]
8. Body of Memo [the first section of the body is the first numbered section]
8. References [optional]
9. Authors
10. Appendix [optional]
    A. Glossary of acronyms
    B. Other information

The rules for each of these sections are described below in corresponding subsections.

2.1 Running Page Headers

The running header on all pages must minimally include: RFC number, Author, Category, Title, Updates/Obsoletes, Status, and Date of the current version. Note that some source document formats such as HTML are not page oriented. In that case, the page header information shall appear once at the top of the document and where possible the Title and Date shall appear in the page title.

Please see any page of this memo for an example of a running page heading.

The RFC number must reflect the current version as described in section 1.1.

"ESDS-RFC-NNNvX[.YY]"

"Updates/Obsoletes: ESDS-RFC-NNN" or "None" (Note that this shall not be used to indicate a new version of an existing RFC, it is meant to provide information about other RFCs whose use may be affected by this RFC.)

"Category: xxxxxxxxx" (required – may be either standards track or technical note. The "standards track" category indicates that the status is either a proposed or endorsed standard or standard.)

“Status: In Development” (required – initially any new RFC is considered in development. Then generally, it advances to Submitted, In Review, and Final)

The author’s name is also listed in the header on each page of the RFC. If there are two authors, the form “name & name” may be used; for more than two authors, use the form “name, et al.”

2.2 Title

Choosing a good title for an RFC can be a challenge. A good title should fairly represent the scope and purpose of the document without being either too general or too specific.

RFCs that document a particular company's private protocol must bear a title of the form "XXX's ... Protocol" (where XXX is a company name), to clearly differentiate it from an NASA product.

Similarly, RFCs that are profiles or extensions of existing standards should include in the title the name of the standards body that manages the existing standard on which the proposed ESDS standard is based. That is, if an ESDS RFC defines a profile of an Open Geospatial Consortium (OGC) standard, “OGC” should be included in the title.

2.3 Status of this Memo

Each RFC must include on its first page the "Status of this Memo" section that contains a paragraph describing the type of the RFC and its status. Generally, a new RFC is submitted with “Submitted” as the status.

2.4 Change Explanation

This section provides a description of any updates or changes when the RFC updates or obsoletes any previously existing RFC. If the RFC does not update or change any others, the content shall be "This RFC does not update or change a previous RFC." If the RFC is a new version, the changes from the previous version shall be described. All previous change information shall be preserved and the most recent information shall be kept at the beginning of the section.

2.5 Copyright Notice

NASA requires the applicable Copyright Notice in each RFC. This copyright applies to the RFC document itself, and allows NASA to freely distribute the document. The RFC copyright does not apply to documents referenced in the RFC or included in it that came with intellectual property rights restrictions from their creators. However, note that the Office of Management and Budget in OMB A-119 states that a voluntary consensus standard "includes provisions requiring that owners of relevant intellectual property have agreed to make that intellectual property available on a non-discriminatory, royalty-free or reasonable royalty basis to all interested parties."

Copyright statement should be one of the following:

1. If created by a contractor pursuant to NASA contract and rights obtained from creator by assignment:

   The contents of this document are not protected by copyright in the United States..

2. If created by civil servants only:

   Copyright © {YEAR} United States Government as represented by the Administrator of the National Aeronautics and Space Administration. No copyright is claimed in the United States under Title 17, U.S.Code. All Other Rights Reserved.

2.6 Abstract

Every RFC must have an Abstract section following the Copyright notice. An Abstract will typically be 5-10 lines, but an Abstract of more than 20 lines is generally not acceptable. The Abstract section should provide a concise and comprehensive overview of the purpose and contents of the entire document, to give a technically knowledgeable reader a general overview of the function of the document. In addition to its function in the RFC itself, the Abstract section text will appear in publication announcements and in the online index of RFCs.

2.7 Table of Contents

A Table of Contents section is required in RFCs 5 pages and longer. A Table of Contents section must be positioned after the Abstract and before the body of the memo.

2.8 Body of Memo

Following the Table of Contents, if any, comes the body of the memo.

2.8.1 Introduction

Each RFC should have an Introduction section that (among other things)

- explains the motivation for the RFC;
- describes the applicability of the document, e.g., whether it specifies a protocol, provides a discussion of some problem, is simply of interest to the NASA Earth Science community, or provides a status report on some activity;
- and in the case of a proposed standard
    - describes why the specification is needed;
    - explains what purpose will be served by making it an ESDS standard.
    - describes the usability of the proposed standard, including the current and potential future user community
    - describes any limitations of the proposed standard, if any

Note that this is a key section of the RFC. The motivation for the RFC should be specific to the contents of the RFC and to the needs of NASA Earth science data systems. It must contain details of why this RFC will be of benefit. General statements about the benefit of interoperability are not sufficient.

2.9 References Section

Nearly all RFCs contain citations to other documents, listed near the end of the RFC. There are many styles for references, and the RFCs have one of their own. Please follow the reference style used in recent RFCs; in particular, see the Reference section of this RFC for an example.

Reference lists must indicate whether each reference is normative or informative. For example, if both normative and informative references are included, then the reference section should be split into two sections, e.g.:

s. Normative References

[n] ….

s+1. Informative References

[n+1] …

Non-normative references to RFCs in development/submitted/in review are allowed, but they must take the following restricted form: the author(s), the title, and the phrase "Work in Progress", for example:

[6]Doe, J., "The Deployment of IPv6", Work in Progress.

2.10 Authors Section

This required section lists those contributors who deserve significant credit for the document. When a long author list is replaced by a single Editor in the document header, the displaced authors can be properly and fully acknowledged in the Authors section. The name(s) and contact information for the primary author(s) of the RFC, as listed in the page header should be detailed here. Contact information must include at least one, and ideally would include all, of a postal address, a telephone number and/or FAX number, and a long-lived email address.

2.11 Appendix

A Glossary of Acronyms should be the first appendix. Additional appendices may contain other information.

3 Submission and Packaging Instructions

This section describes the packaging and file format instruction for all RFC submissions, from their initial submission until their final release. The intent of these instructions is to provide enough guidelines to make submission easy for all parties without being overly restrictive in any dimension. Authors should confer with the RFC editor regarding submission and packaging prior to submitting materials.

3.1 Submission Formats

RFCs must be available in their source document format to facilitate subsequent updating and revision over the life cycle of the standard or technical notes. RFC authors should submit RFCs in a commonly available document format mutually agreed upon by the authors and the ESO.

All RFCs will be made available by ESO in Adobe Portable Document Format (PDF). [3].

This will be the normative format published on the ESO web site.

All supporting materials (described in Section 3.4) will be made available in their original format or PDF as determined in consultation with the ESO.

All ESDS process materials (described in Section 3.6) will be made available in formats determined by the ESO.

3.2 Single vs. Multiple Files

RFC submissions can often include multiple files. This could include the RFC itself and its supporting materials as described in Section 3.4.

3.3 File and/or Directory Naming

RFC authors must confer with the ESO about naming the submitted file(s) prior to submission.

In the case of submissions requiring supporting materials, all supporting materials shall be named as directed by the ESO.

Submitted RFCs should generally be named ‘ESDS-RFC-nnnv0.1.ext’ where ‘nnn’ is the assigned RFC number, and ‘ext’ is appropriate for the document format (e.g. .docx or .txt)

3.4 Supporting Materials

Before an RFC can be approved as a standard or convention, authors must provide evidence of at least two interoperable implementations and demonstrated operational readiness. Therefore, all standards or convention track submissions will require supporting materials.

3.4.1 Evidence of Implementation and Operational Readiness

To become a standard or convention, there must be evidence of at least two implementations or distinct instances of implementations of the standard or convention along with evidence that it is being used in a significant way operationally or is operationally ready (e.g. can be used operationally).

An RFC may be submitted to the ESO with only one implementation or instance, and with limited operational use if others are in the process of being established. However, in this case, final approval of the standard or convention will be delayed until more than one implementation or instance can be documented as being ready for operational use. Attention should be given to the short review cycle of the standards process.

3.4.1.1 Evidence of Implementation

Implementation of a specification means that there is a working set of software that implements that specification. To become an ESDS standard or convention, ideally a specification has been implemented in at least two independently developed software libraries, components, or programs, and that those two or more implementations interoperate. However, it is also acceptable to show that copies of the same implementation, deployed by independent users can interoperate.

The ESO is charged with verifying that there are at least two independent implementations or instantiations that are interoperating.

3.4.1.2 Operational Readiness

Demonstrated operational readiness means that the implementations of the specification are being used to support the actual operations of the users. In other words, the specification has become part of the normal workflow and is not just part of an experimental or trial use.

The ESO is charged with verifying the operational readiness of the specification.

3.4.1.3 Required Documentation

RFC submitters must supply an "Evidence of Implementation" document along with the RFC. This is a separate document, it is not contained within the RFC itself. The Evidence of Implementation document will define the NASA community where the proposed standard or convention is in use. For that reason, the "Evidence of Implementation" document should be as comprehensive as possible, containing an exhaustive list of implementations as known. The contacts listed in this document will be used as the starting point by the ESO to solicit reviews of the proposed document. Having an incomplete list of implementations or a very short list of implementations will imply that the community is very small or the proposed standard or convention is not widely used.

For at least two instances of implementation, be as specific as possible. Include a short description of how the standard or convention is being used in each instance. Include names and contact information of people who are using the standard.

Descriptions should include information such as

- What kind of data is being served/transferred?
- A description of the server(s) or client(s) that use the specification
- A description of the kinds of data and amount of data being served, transferred, described, or encoded using the specification
- How extensively is the specification being used?
- What mechanisms, if any, are in place for the maintenance of the specification and its implementations?

3.4.2 Other Supporting Materials

Supporting materials for a submission may include database schemas, XML schemas, source code, copies of referenced specifications, and documentation of implementation or operational use of a proposed standard. Where supporting materials are intended to be used as source material by users of the RFC, they must be provided in the source format (e.g. XML schemas, header files). Where supporting materials are meant primarily to be read, they may be provided as PDF documents.

3.4.3 Note On Supporting Materials

RFC authors shall provide all required supporting materials together with the RFC submission. As the submission is moved through the process, additional supporting materials may be required. These materials shall be supplied as soon as they are available.

The ESO makes a determination on a case-by-case basis on which submissions require supporting materials.

3.5 Submission Mechanism

Authors should contact the ESO for submission instructions.

3.6 ESDS Process Materials

As a submission, particularly a standards or convention track submission, is moved through the process, additional materials will be generated. This includes ESO notes, TWG notes, public comments, SPG decisions, evidence of implementation, and so on.

The RFC Editor shall collect these materials, package them, and maintain them as part of a collection that includes the submission and its supporting materials.

4 References

[1] IETF Instructions to RFC Authors

[2] ESDS-RFC-024, Process for Earth Science Data Systems Standards

[3] http://www.adobe.com/products/acrobat/adobepdf.html

5 Authors

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6 Appendix A - Glossary

ESDS - Earth Science Data Systems

ESDIS – Earth Science Data and Information Systems

ESO – ESDIS Standards Office

FAX - Facsimile

FTP - File Transmission Protocol

HTML - Hypertext Markup Language

IETF - Internet Engineering Task Force

NASA - National Aeronautics and Space Administration

OGC - Open Geospatial Consortium

PDF - Portable Document Format

RFC - Request for Comment

TCP - Transmission Control Protocol

TWG - Technical Working Group

URL - Uniform Resource Locator

XML - eXtensible Markup Language